DISCUSSION

POST DECCAN TRAP FAULTING IN RAIGAD AND THANE DISTRICTS OF MAHARASHTRA by V. Srinivasan. Jour. Geol. Soc. India, v.59, 2002, pp.23-31.

R.K. Bajpai, Repository Projects Section, Back End Technology and Development Division, Bhabha Atomic Research Centre, Mumbai - 400 084, comments:

The above paper brings to light existence of N-S oriented normal faults around Mumbai which were otherwise missed in satellite data based studies done earlier by other workers thus underlining the vast usefulness of aerial photo-interpretation in geological studies. The author deserves congratulation for providing a lucid account of these faults and their implications. However, certain points require clarification:

1. All N-S oriented faults in this area need not be post-Deccan trap in age. A close look on the orientation of fractures around Cambay node reveals that these faults could be coeval with the Deccan trap episode (Raval et al. 2000).
2. Down throw of western block along the Mahim fault has been estimated to be of the order of 1000 m at places. This seems to have been accomplished episodically in response to tectonic impulses. The present state of geological stresses in southern Peninsular Shield indicates that stresses causing reactivation of faults in central and south India are mainly due to spreading along Carlsberg Ridge in the Indian Ocean. These are expected to trigger strike-slip movements mainly along E-W directed faults *viz*. Narmada-Son lineament, Bhavani Fault etc. Any movement, if takes place along westerly dipping N-S faults around Mumbai, would be of reverse nature causing upliftment of hanging wall rather than submergence.
3. Exact trace of Mahim fault in the eastern side of Trombay is vital in view of the location of the country's premier nuclear research center there, and requires to be defined accurately. Does it run along the escarpment of the Y-shaped Trombay hills?

V. Srinivasan, Geological Survey of India, Shillong, replies:

Pointwise reply to the issues raised by Bajpai are as follows:

1. The faults discussed in the paper are post-trap in age, as they have dissected and vertically displaced the lava contacts.
2. For Mahim Fault and other faults discussed in the paper, the western blocks are down thrown with respect to the eastern blocks. This is based on elevation measurement of marker contacts and juxtaposition pattern on either side of these faults and the exact details are given in the paper. The author has not come across any reverse fault in the study area. All the observation details point towards normal (gravity) nature of these faults.
3. Mahim Fault is projected east of 1002 hillock and Trombay along the N-S trending segment of Thane Creek. As mentioned in the paper, seawater has intruded along the fault in this part and concealed its trace. However, this fault is again exposed on land from Avghada foothill (just west of Thane) to Mahim, where it enters into the sea.

The details presented in this paper are based on aerial photo-interpretation and extensive field checks using Paulin's altimeter. The author is of the strong opinion that further detailed study (such as re-measurement of elevation values of triangulation stations) is urgently required. One such study carried out by Bilham and England (2001) in Shillong Plateau brought out startling revelations to the scientific community.

References

RAVAL, U. and VEERASWAMY, K. (2000) The radial and linear modes of interaction between mantle plume and continental lithosphere: a case study from Western India. Jour. Geol. Soc. India, v.56, pp.525-536.

BILHAM, ROGER and ENGLAND, PHILIP (2001) Plateau 'pop-up' in the great 1897 Assam earthquake. Nature, v.410, pp.806-809.